Volunteer Lake Assessment Program Individual Lake Reports

ROCK POND, WINDHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	425	**Max. Depth (m):**	8.2	**Flushing Rate (yr^{-1}):**	2.5
Surface Area (Ac.):	35	**Mean Depth (m):**	3	**P Retention Coef:**	0.59
Shore Length (m):	1,800	**Volume (m^3):**	418,500	**Elevation (ft):**	153

TROPHIC CLASSIFICATION

Year	Trophic class
1978	OLIGOTROPHIC
1987	MESOTROPHIC

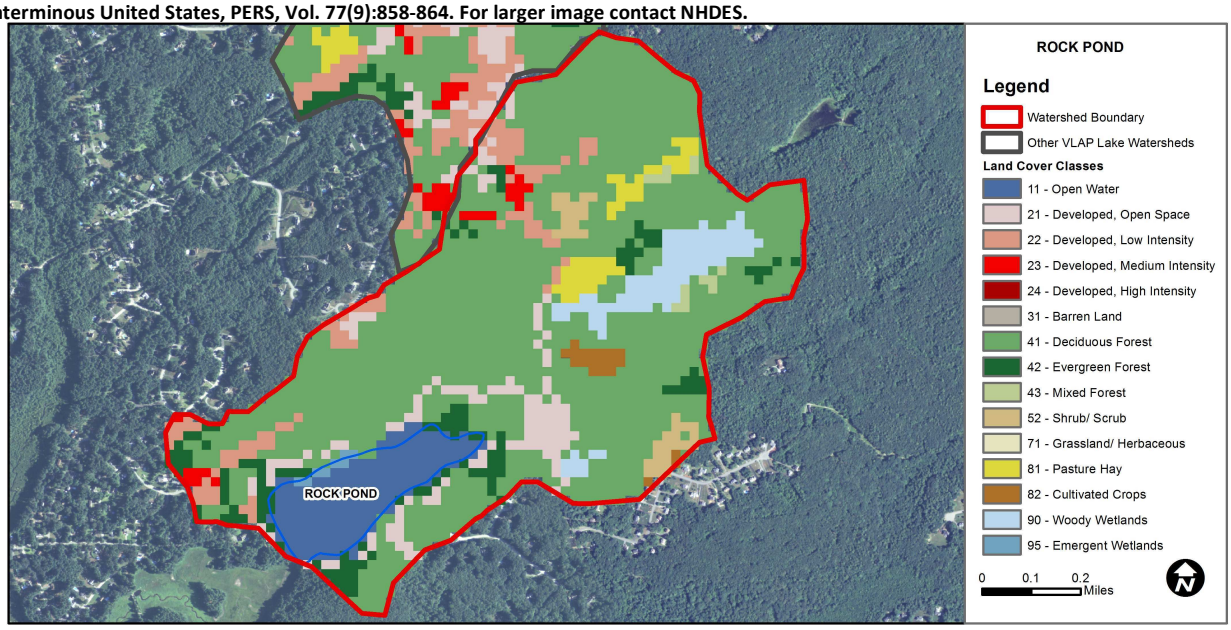
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.71	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	5.93	Deciduous Forest	64.23	Pasture Hay	2.3
Developed-Low Intensity	4.55	Evergreen Forest	5.98	Cultivated Crops	0.96
Developed-Medium Intensity	0.96	Mixed Forest	0.67	Woody Wetlands	4.69
Developed-High Intensity	0	Shrub-Scrub	1.77	Emergent Wetlands	0.38

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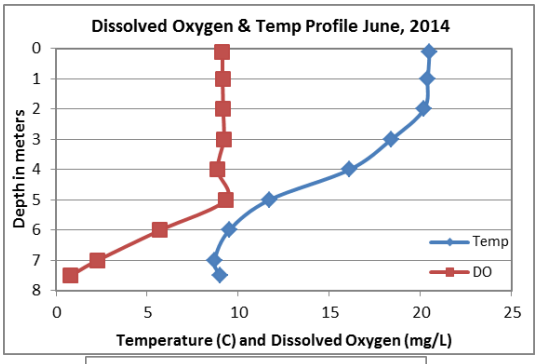
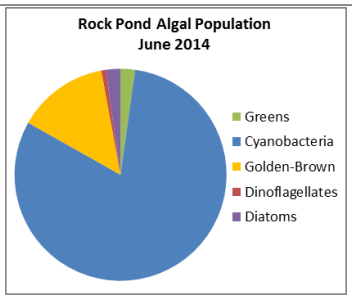
2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were relatively low and less than the state median in June. Historical trend analysis indicates significantly decreasing (improving) chlorophyll since monitoring began. We hope to see this continue!
- **Conductivity/Chloride:** Deep spot and tributary conductivity were slightly greater than the state median and historical trend analysis indicates significantly increasing (worsening) epilimnetic (upper water layer) conductivity since monitoring began.
- **E. coli:** E. coli levels at all nearshore stations were low and much less than the state standard of 88 cts/100 mL for public beaches and 406 cts/100 mL for surface waters.
- **Total Phosphorus:** Deep spot phosphorus levels were low in June and less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Inlet phosphorus was slightly elevated potentially due to stormwater runoff as it was raining while sampling. Outlet phosphorus was within an average range for this station.
- **Transparency:** Transparency was good in June, better than the state median, and improved from 2013. Historical trend analysis indicates significantly increasing (improving) transparency since monitoring began. We hope to see this continue!
- **Turbidity:** Deep spot turbidity was low in June. Inlet turbidity was slightly above average for that station and likely a result of sediments from stormwater runoff. Outlet turbidity was elevated and may also have been a result of stormwater runoff.
- **pH:** Deep spot pH levels were within the desirable range of 6.5—8.0 units and sufficient to support aquatic life. However, historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began. This was a result of low pH measured between 2002 and 2011. Epilimnetic pH appears to have recovered since then.
- **Recommended Actions:** The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. DES' "Homeowner's Guide to Stormwater Management" is a great resource for lake residents. Increase monitoring frequency to better assess seasonal trends. Winter road maintenance activities are likely contributing to the increased conductivity in the pond. Local road agents and winter maintenance companies should obtain a Voluntary NH Salt Applicator License through UNH's Technology Transfer Center's Green SnowPro Certification, if they have not already. The improving chlorophyll and transparency are great signs; keep up the great work!





Station Name	Table 1. 2014 Average Water Quality Data for ROCK POND								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	13.3	3.94	104.3		8	4.90	5.95	0.70	7.23
Hypolimnion			102.9		8			0.81	6.81
Burgess				10					
Carpenter				10					
Inlet			98.3		18			1.59	6.41
Outlet			104.5		14			4.31	7.16
Reed				10					
Swett				10					

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Improving	Data significantly decreasing.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Improving	Data significantly increasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.